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a. If letter or memo:
To: J. W. McCASLIN

From: O. L. CORDES

Subject: TAN-SPERT Health Physics Progress Report for October, 1965: Cord-68-65A

b. If report:
Title:

| 4. Document Date: | c. If publication: |
|---|---|
| November 15, 1965 | Name:<br>Volume:<br>Issue: |

5. Summary (2-3 lines indicating the major subject(s) of the document):

Monthly Health Physics activity/progress report: preperations for SNAPTRAN-2 test, SPERT area activities, Radiological engineering support of PBF, and LOFT. Health Physics participated in presentation of the PBF PSAR to AEC DRL in Washington, DC October 5-7, 1965. SNAPTRAN-2 Destructive Test proposal approved by SAFEGUARDS; two other proposals were returned without approval.

| 6. Name and telephone number of person completing form: | 7. Organization: | 8. Date: |
|---|---|---|
| Burton R Baldwin<br>(208) 525-0203 | Lockheed Idaho Technologies Co. | March 15, 1995 |

HUMAN RADIATION EXPERIMENTS

RECORDS PROVENANCE FORM

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| REPOSITORY NAME | INEL |
| COLLECTION NAME | SYSTEM FOR NUCLEAR AUXILIARY POWER TRANSIENT (SNAPTRAN) |
| BOX NUMBER | INEL BOX NO. P-24724<br>FRC NO. 356723<br>ACCESSION NO. 70 A 1464 |
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PHILLIPS PETROLEUM COMPANY
Atomic Energy Division
Idaho Falls, Idaho

REPOSITORY INEL
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TAN MONTHLY REPORT FOR 1965
FOLDER TAN SPERT H.P. PROGRESS REPORT FOR 1965

November 15, 1965

TAN-SPERT Health Physics Progress Report for October, 1965
Cord-68-65A

Mr. J. W. McCaslin
O F F I C E

The monthly report of the TAN-SPERT Health Physics Section for October, 1965, is as follows:

TSF

The major activities requiring HP coverage in the TSF area during October were:

1. PM-2A work in the Hot Shop
2. Canning and shipping of fuel to a Kansas salt mine
3. Coverage of RML and HCA
4. Transfer of radioactive items in the pool area
5. Decontamination of the RPSSA area.

After the clean up of the RPSSA area the signs "HP approval before entering" were removed from the perimeter fence. Individual areas which still contain contamination or radioactive material are ribboned and tagged.

The personnel frisker, which was just recently installed at the north door of the TAN-602 building, alarmed on 10-6-65 when a secretary was leaving at bus time. Her shoe had a 20 mr/hr particle which was easily removed with masking tape. A complete survey of the 602 building revealed no other contamination. The particle had apparently been tracked into 602 from the TAN-607 pool area where a similar particle was located.

On 10-11-65 a TAN Hot Shop technician required assistance in decontaminating his hand and shoe after working in the Hot Shop.

DECONTAMINATION FACILITIES

The major items decontaminated, chemically cleaned or sandblasted during October include:

1. 5 casks
2. Hot Shop fuel element cutting machine
3. PM-2A support fixture
4. RML milling machine parts
5. Hot Shop hydraulic shear
6. TRA inpile tube
7. Remote pipe cutter

SPERT

The October 27, 1965, SPERT badge pull indicated a series of exposures ranging from 10 to 100 mrem for SPERT personnel not normally exposed to radiation. IDO Personnel Metering maintains, after a recheck, that the film lot is good and the exposures are real. The personnel credited with this unusual exposure range in occupation from secretary to experimental physicist. Since no reasonable explanation for the distribution of exposures can be determined at this time the indicated dose is being entered into the personal exposure record of the personnel involved. Comparison with listings in future badge pulls may establish a pattern for further investigation into the cause of the exposure.

Modifications of the SPERT III control-rod-positioning rubbing pads required removal of contaminated items from the reactor vessel. Closer than usual HP surveillance was necessary as personnel worked around and in the vessel.

During the test series involving neutron activity at SPERT IV, health physics encountered no serious hazards on re-entry to the building after completion of the individual test.

SNAPTRAN

A SNAPTRAN Coordination Meeting was held at the NRTS on October 11, 1965, with representatives from AEC-ID, AI, EG&G, LASL, Sandia and PPCo in attendance. The primary purpose of the meeting was to coordinate the various work loads to meet the SNAPTRAN-2 test schedule.

Health Physics coverage was provided during vibration tests using 500 psi and 1,000 psi drive pressure on the SNAPTRAN-2 reactor. These tests were initiated to determine if the reactor test package would vibrate when the drums were fired and what effect this would have on the EG&G photographic equipment.

Health Physics grid monitoring equipment and instrumentation is essentially ready for the destructive test. Preparations during the month included the construction of fission gas samplers, loading and coding of film badges, loading and coding of high volume air samplers, calibrating detecting equipment, positioning of samplers, and documenting sampler positions.

It has been determined that the Health Physics personnel assigned to the TAN area can cover most of the job assignments scheduled for the test.

A lead scintillation counter shield has been constructed around two 3" x 3" NaI(Tl) crystals to make a sensitive $4\pi$ geometry counter to scan samples from the radiological grid after the destructive test. The counter will be used to separate samples containing only natural background from those requiring further counting.

Numerous activation samples have been counted on the 256 channel analyzer for STEP personnel to aid in studies of the neutron flux inside of the SNAPTRAN-2 core.

SPECIAL PROBLEMS

The studies of the hot waste evaporator carry over shows that about 90% of the carry over is large particulate material that can be easily filtered. On the basis of these findings a request to study the feasibility of a prefiltering system and an inline filtering system for the TAN-616 evaporator system has been sent to Plant Engineering.

A request was sent to Plant Engineering to design and give a cost estimate for the relocating of the southwest entrance door of TAN-606 to the west end of the east-west hallway. This new arrangement will stop the flow of traffic through the newly formed offices in the southwest corner of TAN-606.

A prototype multi-jet centripeter has been constructed in an effort to obtain a device which will allow particle size sampling of airborne particulate activity at large flow rates. This device is a scale up of the English developed centripeter and works on the principle of the annular impacters which condense the particle laden air inside a sheath of clean air as it passes through an annulus. The centripeter attempts by a series of knife edge jets to separate the clean air from the condensed-particle-laden air and thus greatly reduces the volume being sampled. If successful the output from the centripeter can be fed into a conventional particle sizing instrument for classification. Such an arrangement would allow a sampling of radioactive clouds such as those from the SNAPTRAN tests where large flow rates are required to obtain measurable samples during the few seconds required for the cloud to pass by.

RADIOLOGICAL ENGINEERING

A critical re-evaluation of the various parameters used in the PBF PSAR radiological calculations was performed in preparation for presentation of the PSAR to the ACRS sub committee and to the full ACRS committee.

Several "hand" calculational techniques were studied in an effort to develop a quick method of checking the inventories calculated by the CURIE code and to perform scoping calculations. Both steady state and transient operations have been considered.

Procedures have also been developed to calculate the radiological hazards resulting from the release of the fission product inventory. Specifically, the procedures are used to make a quick assessment of the dose to the thyroid gland resulting from inhalation of a cloud of fission products. The calculations consider the position of the receptor downwind from the release point, the metecrological conditions at the time of release, and the type of release (continuous or instantaneous). Development was also started on similar methods to calculate the external gamma exposure from a fission product cloud.

A literature review concerned primarily with determining release mechanisms and release fractions of various fission products, particularly of iodines and noble gases under water cooled and gas cooled conditions, has been initiated. The behavior of iodine within the LOFT containment vessel was also studied, since it is of particular significance in determining the iodine release to the atmosphere.

A two day information exchange meeting was conducted with Eastman Kodak personnel on October 28 and October 29. A report of this meeting is being prepared.

On October 5-7 the PBF PSAR was presented to AEC DRL in Washington. Our participation in this presentation has been reported in Cord-63-65A.

SPERT-STEP SAFEGUARD

Proposals considered:

October 7, 1965 - SNAPTRAN-2 Destructive Test Returned.

October 12, 1965 - SPERT III E-core Loading and Static Experiments Returned.

October 13, 1965 - SNAPTRAN-2 Destructive Test Approved.

SUMMARY OF ROUTINE WORK

| | |
|---|---|
| Smears | 2300 |
| Direct reading dosimeters issued | 18 |
| Body fluid samples | |
| Routine | 0 |
| Special | 0 |
| Liquid samples | |
| Waste water | 1 |
| Radioactive shipments | |
| Off-site | 4 |
| On-site | 38 |
| Burial Ground | 2 |
| Laundry | 6 |
| Safe Work Permits | 50 |
| Beryllium analysis | 0 |
| Safety Meetings | 1 |
| Excess exposure requests | 3 |
| Whole body analysis | 12 |
| Green Tags | 222 |

MAN HOUR TABULATION

| EXEMPT | NONEXEMPT | TOTAL | | EXEMPT | NONEXEMPT | TOTAL |
|---|---|---|---|---|---|---|
| | Scheduled Hours | | | | Actual Hours Worked | |
| 1344 | 1848 | 3192 | | 1306 | 1741½ | 3047½ |
| | Overtime | | | | Absences | |
| 2 | 85½ | 87½ | | S - 0 | 28 | 28 |
| | | | | V - 40 | 136 | 176 |
| | | | | DF - 0 | 24 | 24 |
| | | | | O - 0 | 4 | 4 |
| | TOTAL | 3279½ | | | TOTAL | 3279½ |

OLCordes:dc

O L Cordes

cc: J. P. Lyon
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